Teaching ESP Writing: OCHA in a CALL Class

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Abstract

Nonnative speakers of English who intend to engage in professional work need the basics of English for professional communications and the skills with which to continue their linguistic development throughout their professional lives. These needs should be addressed in language education at the university undergraduate and graduate levels. This paper will reject the "native speaker model" for language education and promote the "professional discourse community model" plus the equipping of students with skills that can serve them in a lifelong approach to language learning. Specific examples of classroom activities will be presented.

Introduction

On July 12, 2002, the Japanese Ministry of Education, Culture, Sports, Science and Technology announced the need "to cultivate 'Japanese with English abilities.'" It recognized the importance of acquiring "communications skills in English, which has become a common international language, in order for living in the 21st century." It also acknowledged that "the English-speaking abilities of a large percentage of the population are inadequate, and this imposes restrictions on exchanges with foreigners and creates occasions when the ideas and opinions of Japanese people are not appropriately evaluated." (http://www.mext.go.jp/english/news/2002/07/020901.htm)

This last-mentioned portion is of extreme importance in the professional world. Noguchi (2001) discusses the importance of linguistic ability to participate in the construction of knowledge in the sciences. This discussion is based on a rich literature forming the basis of the concept of knowledge being constructed via language. Gross (1990, p. 203) states that "facts are by nature linguistic--no language, no facts." The connection between science and rhetoric has been promoted by many (Woolgar, 1976; Fleck, 1979; Gilbert & Mulkay, 1982; Myers, 1985, 1986, 1988; Latour & Woolgar, 1986; Bazerman, 1988). In 1990, Myers wrote a book entitled *Writing Biology: Texts in the Social Construction of Scientific Knowledge*, in which he traces how a scientific discovery is not reported as such at first, but appears merely as a claim. It only becomes a "discovery" after being retold as an event when it is accepted by the discourse community.

The need to "cultivate Japanese with English abilities" is obviously evident, but the question arises of how this can be realized. Despite compulsory English education from the first year of junior high school, the Ministry was forced to recognize the inadequacy of this desired language ability. One possible reason often given is the study of English in order to pass college entrance examinations. This usually leads to extreme focus on minute details of grammar, vocabulary and reading comprehension with little attention to communicative use of language. Another possible explanation for the inadequacy of linguistic skills is the use of a "native speaker model" as the target. While this might be ideal, it is not realistic and can thus be detrimental to motivation. Such a native speaker target is rejected by the Common European Framework of reference for language learning, teaching and assessment put forth by the Council of Europe after about 30 years of research (2001:5): "...the aim of language education is profoundly modified. It is no longer seen as simply to achieve 'mastery' of one or two, or even three languages, each taken in isolation, with the 'ideal native speaker' as the ultimate model." It also emphasizes that "language learning is a lifelong task" and therefore, "the development of a young person's motivation, skill and confidence in facing new language experience out of school comes to be of central importance."

The question thus arises of what can be done in the Japanese university situation. Some very promising ideas come from the field of ESP, or English for Specific Purposes. In August 2002, JACET (Japan Association of College English Teachers) held a summer seminar to explore new perspectives in this rapidly progressing area, which is also called LSP (language for specific purposes). At the seminar, Noguchi (2002) stated that "ESP is much more than teaching the specifics of coping with specific language problems in specific

areas. ESP is about trying to put into practice important concepts of what language is and how it influences human society; ESP teachers need to be aware of this in order to equip their students with what they will need to become active participants in their professions in a globally linked world."

Described in this paper are specific examples of how these theoretical concepts were translated into classroom explanations and tasks.

Course description

The course described here was offered by the Graduate School of Science at Osaka University in the spring semester of 2003. This one-semester course was planned to teach first year's master's degree students how to write up their research. The course had been taught twice previously in a standard classroom, the first year using OHP materials and the second year using a computer connected to a projector system and a video camera system to allow plain paper materials to be presented on screen. However, it was thought that using a computer-assisted language laboratory approach would enable a more individualized teaching and learning environment, especially because this was a class for graduate students.

OCHA to raise awareness

In order to use the "professional discourse community model" and to have the students acquire the skills to continue their linguistic development, the OCHA approach was devised. This acronym represents the kinds of activities that the students are asked to engage in to raise their awareness of the linguistic features of professional texts. It stands for Observe, Classify, Hypothesize and Apply. The students are told that each text has both content and structure, and that in this class, the focus will be on the latter. By repeating these activities for all sections of the research paper that they are writing, it is hoped that they will not only acquire the rhetorical, grammatical, lexical and technical features of this professional genre, but that by doing this, they will also learn how to approach other types of texts that they might encounter in their future work.

The importance of learning these genre features is clearly evident from the ample research in professional discourse (Bhatia 1993, Belcher and Braine 1995, Flowerdew 2002, Gunnarsson et al. 1997, Swales 1990, Swales and Feak 1994). One interesting paper reports the relationship among "lexical phrases, culture, and subculture." Okamura and Shaw (2000) examined the differences among transactional letters written by academic professionals and non-professionals who were native speakers of English and nonnative speakers of English. What is referred to in this paper as "discourse community," they refer to as "subculture." They asked four groups of NS and NNS who were or were not members of professional discourse community to write a cover letter to the editor of an international journal to accompany the submission of a manuscript. They classified their findings into the three categories of grammatical, rhetorical and lexical. All of the groups displayed acceptable grammatical performance, but rhetorical awareness, which is important in professional texts, was lacking among the nonprofessionals, even the native-speaker subjects. Their other important finding was the importance of teaching lexical phrases to the NNS as these were "signals of insider status" (a concept from Nattinger and DeCarrico 1992).

This class was planned to have the students observe the genre features by asking them to identify the PAIL (another acronym) for each portion of the text. The P stands for the "purpose" of that section of the text, A is the "audience" for which it is aimed, I is the "information" that it should contain, and L is the "language features" that are employed to present this information in order to respond to the purpose as expected by the target audience. For example, the title of a journal paper has a different PAIL from the introduction section of the paper. The title must first attract the suitable target audience to the article, as it is frequently the first part of the article to be seen, during scanning of a database listing or a table of contents. The title should be as appealing as possible to as wide a range of professionals as possible. Even those in peripheral areas might be able to benefit from what is reported. The information that the title should carry is a summary of the entire paper and this is done, sometimes in a complete sentence format, sometimes using appropriate phrases. On the

other hand, the introduction section of the article has the purpose of explaining the basis of the research, including theoretical and background information so that the audience that has chosen to read the paper will be able to understand the reasoning underlying the work being presented. The language features used have been analyzed by many ESP researchers following the tradition of Swales (1981). The PAIL of the different parts of a research article is explained in the course textbook (Noguchi and Matsuura 2000).

Class activities

A total of 12 classes were held from mid April to mid July and one class will be held in mid September. In the first class, the approach was explained and students were asked for permission to allow their written work to be shown to other members of the class and to be analyzed for research purposes. The first task was to find (printed or online version) of the instructions to authors for the journal in which they wished to publish their paper. The students are asked to complete Excel files with information such as journal name, journal policy, types of papers accepted, where to send the manuscript, title page information and details, paper sections and order, maximum length, style instructions, paper and page format details, electronic submission details, page charges, copyright agreement details, and offprint information. This is done before dealing with the rhetorical, grammatical and lexical details mentioned above. This type of activity was devised because the technical details of preparing legible manuscript is usually another great stumbling block for novices, especially nonnative English speakers. Starting with the journal instructions to authors not only makes the students aware of the physical format of a paper to be submitted (and greatly eases the task of the instructor) but also shows them how to decipher a professional text. The completed Excel files are combined and given out to all students so that they can compare the differences among journals and learn that they do need to adapt the manuscript to the journal requirements.

Next, the students are asked to analyze the features of the different sections of the text and the reported results are again combined and returned to all members of the class. Following the Observe and Classify activities, the students are asked to Hypothesize about how they could Apply this information to their own writing. An example of an analysis of an abstract is shown in Table 1. The Section analysis is based on the textbook explanation for the different types of information usually presented in an abstract: abs1, background of research; abs2, purpose of research; abs3, methods used; abs4, main results; abs5, main conclusion. Students are asked to observe verb tense that is used to signal different types of information in professional texts and "hint words" or words and phrases which serve as discourse signals to guide the reader.

After these observation and classification stages, the students are asked to hypothesize about rhetorical structure (order of information presentation), grammatical structures (one important class words is the verbs), and lexical items. Here the students are introduced to the utility of concordance programs and are encouraged to build their own individual databases for personal reference when writing their papers. See Table 2 for sample collocations that can be useful when writing alone.

The next step is applying what they have learned to their own writing. Table 3 shows that they turn in their abstracts in a similar format to that used for the analysis. This is to reinforce the importance of text structure. These steps are repeated for all sections of the research article to be covered. As most of the students are first-year master's students who have only recently or not yet actually started, their research, they can often only write the Introduction and parts of the Experimental and Results sections. Thus, more class time can be devoted to comments and discussion on how their work can be improved.

At the time of this manuscript preparation, the course has one more period to be held in September. This class will be devoted to simple oral presentations of each student's work.

Concluding remarks

This paper has outlined the theoretical basis of an ESP course for writing up research at the graduate school level. The aim is at effective professional communication by utilizing the OCHA approach to raise awareness

of the structural features of a text of a specific genre. This approach can continue to be useful for dealing with professional texts in work situations that the students are expected to encounter in the future.

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	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Name	Journal Name	Year	Vol	Page	Title	Paper Type	Sent No.		Sent.	Section	Verb	Hint words
2	XXX	Journal of the Physical Society of Japan	1998	67, NO. 11	3985-3990	Design Equation : A Novel Approach to Heteropolymer Design	algorithm	2301		A novel approach to heteropolymer design is proposed.	abs2	pres	A novel approach to X is proposed.
3	XXX	Journal of the Physical Society of Japan	1998	67, NO. 11	3985-3990	Design Equation : A Novel Approach to Heteropolymer Design	algorithm	2302		It is based on the criterion byKurosky and Deutsch,with which the probability of a target conformation in a conformation space is maximized at low but finite temperature.	abs3	pres	It is based on X.
4	XXX	Journal of the Physical Society of Japan	1998	67, NO. 11	3985-3990	Design Equation : A Novel Approach to Heteropolymer Design	algorithm	2303		The key feature of the proposed approach is the use of soft spins (fuzzy monomers) that leads to a design quation ,which is an analog of the Boltzmann machime learning equation in the design problem.	abs3	pres	The key feature of proposed approach is the use of X
5	XXX	Journal of the Physical Society of Japan	1998	67, NO. 11	3985-3990	Design Equation : A Novel Approach to Heteropolymer Design	algorithm	2304	*	We implement an algorithm based on the design equation for the generalized HP model on the 3*3*3 cubic lattice and check its performance.	abs4, 5	pres	We implement an algorithm based on X

Table 1

	A	B	C	D	E	F	G	H	I	J
1	Student Name	Journal Name	Tentative Title	Paper Type	No	Own sentence	Section	Verb	Hint words	Suggestions
2	YYY	Nucleic Acids Res.	Identification of crystal structure and reaction mechanism of Thermus thermophilus MutM for repair of 8-oxoguanine	Mechanism	1	MutM is a bacterial 8-oxoguanine glycosylase responsible for initiating base-excision repair of oxidized guanine residues in DNA.	abs1	Pres	X is Y	MutM is a bacterial 8-oxoguanine glycosylase responsible for initiating base-excision repair of oxidized guanine residues in DNA.
3	YYY	Nucleic Acids Res.	Identification of crystal structure and reaction mechanism of Thermus thermophilus MutM for repair of 9-oxoguanine	Mechanism	2	Here we report five different crystal structures of MutM-DNA complexes that represent different steps of the repair reaction cascade catalyzed by the protein and also differ in the identity of the base opposite the lesion (the 'estranged' base).	abs1	Pres	Here we report X that represent	Here we report five different crystal structures of MutM-DNA complexes that represent different steps of the repair reaction cascade catalyzed by the protein and also differ in the identity of the base opposite the lesion (the 'estranged' base).
4	YYY	Nucleic Acids Res.	Identification of crystal structure and reaction mechanism of Thermus thermophilus MutM for repair of 10-oxoguanine	Mechanism	3	In this study, we found how reaction mechanism is driven, which reduce 8-oxoguanine and repair DNA.	abs2	Past	In this study, we found how	In this study, we found how the reaction mechanism is driven to reduce 8-oxoguanine and repair DNA.
5	YYY	Nucleic Acids Res.	Identification of crystal structure and reaction mechanism of Thermus thermophilus MutM for repair of 11-oxoguanine	Mechanism	4	These structures reveal that the MutM active site performs the multiple steps of base-excision and 3' and 5' nicking with minimal rearrangement of the DNA backbone.	abs2	Pres	X reveal that	These structures reveal that the MutM active site performs the multiple steps of base-excision and 3' and 5' nicking with minimal rearrangement of the DNA backbone.

Table 2

	A
1	**report**
2	tures known as Holliday junctions. We report that Mus81 and an associated prot
3	**To our knowledge, this is the first report of lateral roots in any plant spe
4	in Saccharomyces cerevisiae. Here, we report the identification and characteri
5	**paper**
6	ribute to lysosomal biogenesis. *This paper gives morphometric variations and
7	**work**
8	tein kinases (Cdks) in eukaryotic cells work as a key enzyme at various points i
9	ated transition by honey bees from hive work to foraging is associated with an i
10	in Saccharomyces cerevisiae. Previous work showed that Mcm10p interacts with t
11	**study**
12	width and perimeter of the head. In the study area,divergence of morphometric me
13	m in lateral roots. Therefore, in this study, we reported on tropistic response
14	eneration ability in Xenopus. In this study, we investigated the mechanism by
15	lantation experiments were performed to study which epidermis or mesenchyme is r

Table 3

専門英語作文指導：CALL 授業における OCHA について（要旨）

野口ジュディー （武庫川女子大学）

要約

英語を母語としないものが専門分野で活躍するためには英語の基礎力とその専門分野で継続的に英語力を上達させるための技能が求められる。このような専門分野英語教育は大学学部および大学院で取り組まなければならないものである。本稿では「母語話者モデル」ではなく「専門分野コミュニティーモデル」での英語教育の進め方について述べ、実際の授業例についても紹介する。

序文

昨年度文部科学省が打ち出した「『英語が使える日本人』の育成のための戦略構想」では、21 世紀を生き抜くために世界共通語となった英語によるコミュニケーション能力を身につけることの重要性が謳われている。英語で発信できないために折角のアイデアや研究成果が正当に評価されていないのである。この点は特に専門分野において重要である。

野口(2001)では科学技術分野での英語運用能力の重要性について述べられている。Gross (1990)は「真実とは本来言語的なものである。言語が無ければ真実は無い。」とまで言い切っている。科学と言語表現との関係については多くの研究が行われてきている。Myers (1990)では科学の発見は「専門分野コミュニティーにおいて認知されたイベントとして語られて初めて「発見」となる。」と述べられている。

『英語が使える日本人』の育成が重要であることは明らかであるが、問題はそれをどのように実現するかである。中学 1 年から義務的に英語教育があるにも関わらず、十分な英語力が身についていないのが現実である。原因の 1 つに大学入試対策として文法、語彙、読解力の瑣末な点に焦点を当てた英語教育があげられる。また、もう 1 つの原因として「英語母語話者モデル」を目標に掲げていることも考えられる。「母語話者モデル」は理想的ではあるが、学習意欲を阻害するものでもある。この「母語話者モデル」は 2001 年に出された EU の"Common European Framework of reference for language learning, teaching, assessment"においても否定されている。この"Common European Framework"では「言語を学ぶ目的は変化した。言語を習得するということはもはや「理想的な母語話者」になることを目標とするものではない。言語習得は生涯学習の一環であり、そのため学校を出て新たな言語に触れる若者に学習意欲、技能、自信を高めさせることが最も重要なこととなる。」と述べられている。

それでは、日本の大学教育において何をすればいいのであろうか。ESP（専門英語教育）の分野からいくつか有望な提案が出されている。2002 年 8 月の JACET（大学英語教育学会)夏季セミナーにおいても ESP が 1 つのテーマになり、野口(2002)においても「ESP は単に特定分野における特定の言語事象の問題を扱うだけのものではない。ESP は「言語とは何か」、「言語が社会にどのような影響を与えるのか」という重要な点について考えることをまさに実践しているものである。ESP 教師は学生たちに世界とつながっているそれぞれの専門分野において積極的に活動できる能力を身につけさせる必要があるのである。

授業内容

2003 年 1 学期に大阪大学大学院理学研究科博士前期課程 1 年生向けに研究論文の書き方を指導する授業が行われた。このクラスは過去 2 年間は通常の教室で OHP やプロジェクタを使って行われた。しかし今回は、より個々の学生に適切な指導を行うため CALL (Computer Assisted Language Learning)システムを活用した授業となった。

学習意識を高める"OCHA"

「専門分野コミュニティーモデル」で継続的に学習技能を高めるためには"OCHA"と呼ばれる方法が考案された。"OCHA"とはO (Observe、観察する)、C (Classify、分類する)、H (Hypothesize、仮説を立てる)、A (Apply、適用する)の頭文字を合わせたものである。全てのprofessional texts（専門分野での研究、業務に関わる文書）には内容と構造があり、"OCHA"はそのうちの構造に焦点を当てるものである。自分が書いている論文に対して繰り返し"OCHA"を使うことにより、学生は専門分野における修辞的、文法的、語彙的および論文書式、正書法、綴り方などを含む技術的特徴を習得するだけでなく、将来関わるであろう他の種類の論文への対応方法も身につけられる。

その専門分野固有の特徴を習得することの重要性はBhatia (1993)を始めとする大量の研究により明らかにされている。Okamura and Shaw(2000)では英語母語話者であるかないか、専門分野コミュニティーに属しているかいないかで4つに分けたグループに対して文法、修辞、語彙に関する調査を行った。文法に関しては全てのグループが許容レベルであったが、専門分野論文では特に重要とされる修辞に関しては英語母語話者であっても専門分野コミュニティーに属していないグループでは問題があった。

授業では、また"PAIL"という手法も用いた。"PAIL"とはP (purpose、目的)、A (audience、読み手、聞き手)、I (information、含んでいる情報)、L (language feature、読み手の推測に合うような流れで目的に結びつくように情報を提示する)の頭文字を合わせたものである。例えば、専門誌によってそれぞれ異なるPAILが必要となる。特に論文のタイトルは検索対象でもあり、出来るだけ幅広い専門分野の読者に訴えかけるものでなければならない。タイトルは完全な文章または適切なフレーズの形で論文全体の要旨をあらわすものである。タイトルに完全な文章を推奨する専門誌もあれば、文章形式のタイトルを受け付けない専門誌もある。一方で、論文の導入部は根拠となる理論や背景について説明を行いながら研究の基盤を説明し、提示されている作業に対する読み手の推論を助けるものである。このPAILに関しては授業で用いた教科書で説明されている。

授業進行

4月中旬から7月中旬までに12回、9月中旬に1回授業が行われる。最初の授業で学習方法が説明され、学生たちは自分の書いた原稿を他の学生に見せることと研究目的で使うことについて許諾を求められる。最初の作業は、自分たちが投稿したい専門誌の投稿規程について調べることであった。学生は必要事項（専門誌名、投稿先、論文の長さ、ページフォーマットなど）をエクセルファイルに記入した。この作業は修辞的、文法的、語彙的作業の前に行われた。この種の作業を行うのは英語を母語としない専門分野コミュニティー初心者にとっては大きな障害となりうるため、最初に行った。投稿規程を調べることで物理的なフォーマットがわかるだけでなく、専門論文の読み方も理解できるようになる。個々の学生が作成したエクセルファイルを合体させ、全員に見せることにより、投稿規程が論文により異なることを理解し、また、自分たちの書く論文を専門誌が求めている形式に合わせなければならないことを学ぶのである。

次に学生は論文の各部分の特徴を分析し、全ての分析結果を合わせて、全員に提示する。観察、分類作業を経て、学生は集めた情報をどのようにすれば自分の論文に適用できるかについて仮説を立てる。論文の要約を分析した例をTable 1.に示す。学生は動詞の時制と"hint words"（読み手を導くための専門分野コミュニティーでの指標）についても分析する。

これらの観察と分類分けの段階の後、学生は修辞的な構造、文法構造、語彙などについての仮説の段階に入る。ここで学生はコンコーダンスプログラムの使い方を習得し、自分たち自身の論文データベースを作成することになる。コンコーダンスプログラムで調べた共起例は論文を書く際に非常に有用である。(Table 2.に示す。)

次の段階はこれまで学習した内容を実際の作文に適用する。学生自身が書いた要約を、これまで分析してきたフォーマットに入れた例をTable 3.に示す。この作業により文章構造の重要性を再認識させる。この作業を論文の全ての部分について行う。ほとんどの学生が研究を始めたばかりの博士前期課

程 1 年生であるため、実際に書けたのは導入部、実験や結果の一部であった。彼らの論文をよりよいものにするためには更なる時間が必要である。9 月に行われる授業は学生たちに成果を口頭発表させる形で行われる。

結論

本稿は理論に裏付けられている ESP を活用した、大学院生レベルでのライティング能力向上を目指す授業についての概要である。授業の目的は、専門的なコミュニケーションレベルにおいて、"OCHA" 手法を用いて特定分野の論文の構造に対する認識を高めることである。この方法は、学生たちが将来の職場において professional texts を扱う際にも有効であり続ける。